

The pond and waterfall at the City of Mankato wastewater treatment plant enhance the grounds for the staff's enjoyment. Members of the public see it during plant tours, and some high school students have used it as a backdrop for graduation photos.

# Rubble as Resource

THE STAFF AT THE MANKATO (MINN.) WASTEWATER TREATMENT PLANT BUILDS A WATERFALL AND POND FROM CONSTRUCTION DEBRIS

By Mary Shafer

PHOTOS COURTESY OF CITY OF MANKATO WASTEWATER TREATMENT PLANT

There was no wastewater treatment facility in Mankato, Minn., in the 1870s, when Laura Ingalls Wilder, who later would write the *Little House on the Prairie* memoirs, lived in nearby Walnut Grove. But the staff at the Mankato Wastewater Treatment Plant retains the heartland values of pride of place and making do with materials at hand that those books celebrate.

A plant upgrade to tertiary treatment in 2000 left mounds of stone rubble just inside the plant entrance. Instead of paying to remove it, the plant staff got creative and built a scenic pond with it.

Using an existing tree as a focal point, crew members cleared out brushy overgrowth and built a retaining wall of old Mankato limestone from a nearby quarry. Inside the wall, they formed the pond, about 10 feet across and five feet deep. Then they planted flowers to entice the eye.

"Anybody that comes in notices the pond. We have an open house every year in the early fall, and there have been a lot of compliments."

MARY FRALISH

## USING THE FLOW

Just inside the chain link plant gate, an effluent stream runs along an old wooded area that had been excavated. Staff saw an ideal opportunity to incorporate a waterfall that would aerate the stream and create a delightful vista leading the eye to the pond.

Initially, the majority of treated effluent was pumped to a discharge point into a nearby stream and a small amount was diverted

to the pond. When first completed, the pond functioned solely as a scenic feature that simply allowed the effluent to evaporate.

"We weren't allowed to use it for irrigation or anything else because it didn't yet meet Title 22 standards," says Mary Fralish, deputy director of Public Works and Environmental Services.

California Title 22 Standards for Water Reuse, adopted by many states, specify a level of tertiary treatment sufficient to protect public health for uses that include food crops, parks, playgrounds, schoolyards, residential landscaping and golf courses.

In 2006, Mankato added a Water Reclamation Facility (WRF) to its back end, producing effluent that does meet Title 22 standards. Now, the plant's flow runs to a primary effluent pool, from which it is pumped in four different streams. The first runs underground directly to the stream outfall.

The second and smallest flow runs over the top of a ledge, about 15 feet to a second ledge, over which it falls into the pond. There it is left to evaporate, refilling as needed, based on a float indicator.

The third runs 1,500 feet underground to irrigate the grounds of Riverfront Park, a public area next to the treatment plant. The last is pumped underground to serve as cooling water for the Mankato Energy Center, a privately owned electric power plant 1.5 miles away. What doesn't evaporate in the cooling process is sent back through a loop of pipe to the Mankato treatment plant to join the main flow to the discharge point.

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Actual pond construction costs for the liner and landscaping plants came to less than \$1,000, paid out of the wastewater facility's general operating fund.

#### OPERATOR'S DESIGN

Maintenance operator Troy Shumski was the project's lead designer. Two maintenance people and one summer helper worked on it around their regular duties.

"We had talked for a couple months about having a feature like that," recalls Fralish. "Troy drew up some plans and got input from a local garden center's pond specialist. They came out and looked at it after it was finished, and they were impressed."

A single light illuminates the waterfall, which occasionally attracts

wildlife. "The guys keep a duck decoy out there, and we do have some ducks land in the pond," says Fralish. "They mainly land in the clarifier, though, because it's larger." Some shrubbery has been planted against the building to complement the pond.

Though the pond and waterfall serve mainly to enhance the grounds for the staff's enjoyment, some members of the public see it during plant tours, and some high school students have used it as a backdrop for graduation photos.

Fralish is proud of her staff's accomplishment. "Anybody that comes in notices the pond," she says. "We have an open house every year in the early fall, and there have been a lot of compliments." **tpo**

The City of Mankato treatment plant added a water reclamation facility to its back end in 2006 to produce reuse-quality water.

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